

Cooperative Institute for Meteorological Satellite Studies (CIMSS)
University of Wisconsin, Madison, WI

1.) The Cooperative Institute for Meteorological Satellite Studies (CIMSS) at the University of Wisconsin was established between NOAA/NESDIS and the University in 1980 to foster collaborative research in atmospheric and earth system science using satellite technology. The primary purpose of establishing CIMSS was to create a mechanism to bring together the resources of a research-oriented university, NESDIS, and other line offices of NOAA to develop a center of expertise in research relevant to satellite meteorology. In 1989, NASA became a member of the Cooperative Institute.

Currently, CIMSS consists of approximately 100 University of Wisconsin employees. There are strong collaborations with the 8 NOAA scientists and 1 NASA scientist who are on site. These research collaborations increase our understanding of remote sensing and its application to weather and forecasting, clouds and radiation, global hydrological cycle, environmental trends and climate.

CIMSS mission is to:

- Foster collaborative research among NOAA, NASA, and the University in those aspects of atmospheric and earth system science which exploit the use of satellite technology.
- Serve as a center at which scientists and engineers working on problems of mutual interest may focus on satellite related research in atmospheric studies and earth system science.
- Stimulate the training of scientists and engineers in the disciplines involved in the atmospheric and earth sciences.

2.) CIMSS received approximately \$3.2 million of NOAA funding in FY03.

a) Most of this funding was from the NESDIS Office of Systems Development, the Interagency Program Office and the Office of Research and Applications..

b) As outlined in the CIMSS Cooperative Agreement proposal, research work (themes) sponsored by NOAA is performed in six task areas:

Task A. Administrative Base Support

This task provides partial support for CIMSS administration, graduate students, visiting scientists, and non-research programs essential to the scientific work environment of CIMSS.

Task B. Remote Sensing Research and Development

These research and development tasks focus on creating algorithms for inferring Earth surface and atmospheric state parameters (temperature, moisture, clouds, pressure) with remote sensing data (space borne and ground based).

Task C. Data Processing Techniques

Studies here include development of scientific research applications software (e.g. data processing algorithms for microcomputer and Unix workstations), and visualization and display

techniques (e.g. Vis5D, VisAD, Java) for analyzing geophysical data.

Task D. New Remote Sensing Instrumentation and Applications

Investigations for this task emphasize new instrument approaches to improve environmental remote sensing measurements, including high-spectral resolution systems, high-spatial resolution multispectral systems, ground-based systems, aircraft-based systems, and satellite-based systems.

Task E. Data Assimilation Studies

These research activities explore the impact of remote sensing data on numerical analysis and prediction models. Observing system simulation experiments (OSSE) are conducted with theoretical data sets to evaluate future measurement systems.

Task F. Data Collection and Archive

This task includes collecting remote sensing data for long-term trend analyses as needed for climate and other retrospective studies.

c) Overall, CIMSS support is well balanced between short term, medium term and long term projects. Approximately 50% of CIMSS funding from NOAA involves current geostationary and polar-orbiting sensors, and is therefore short-term. Some product development and calibration efforts are medium-term (20%), while CIMSS provides strong research support (30%) for future NOAA instrument and product development, which are long-term activities. Research with current GOES deals with results between 0-2 years, while research on GOES-R spans each time frame.

d) The geographic scope of CIMSS research covers all three scales – regional, national and global. As specific examples, we have research that addresses changes in global cloud, regional biomass burning studies, and data assimilation studies that address improving weather forecasting over the CONUS.

3.) In the past 5 years the funding from NOAA to CIMSS has been between 25-37% of our annual research support.

4.) While our research is broad-based, we have particular expertise in the following areas of satellite remote sensing:

- 1) Atmospheric temperature and moisture retrievals and derived products
- 2) Satellite winds
- 3) High-spectral resolution measurements and instrumentation
- 4) Biomass burning
- 5) Global cloud properties
- 6) Satellite calibration and product validation

5.) NOAA provides 50% or more of the support for the following individuals:
Jim Jung

Jim Nelson
Matt Gunshor
Scott Bachmeier
Chris Schmidt
Joleen Feltz
Derrick Herndon
Bormin Huang
Jun Li
Dave Stettner
Tony Schreiner
Sarah Thomas
Paul van Delst
Maria Vasys
Chris Velden
Tom Whittaker
Tony Wimmers
Tom Zapotocny
Howard Berger

Contacts: Steve Ackerman, 608-263-3647 or Tom Achtor, 608-263-4206